AMENDMENTS TO THE CLAIMS

1.   **(Currently Amended)** A method of making an antibody molecule, the antibody containing an immunoglobulin heavy chain comprising a α3 domain or a mu domain, the method comprising:

(a)   ~~Providing~~ providing a nucleotide sequence encoding an immunoglobulin heavy chain molecule;

(b)   ~~Modifying~~ modifying the nucleotide sequence to form a modified nucleotide sequence, wherein the modifying is in the region of the nucleotide sequence encoding the C-terminus 18 amino acids of the immunoglobulin heavy chain molecule to remove, or reduce the effectiveness of, one or more vacuolar targeting signal of the encoded immunoglobulin heavy chain;

(c)   ~~Inserting~~ inserting the modified nucleotide sequence into a host plant cell; and

(d)   ~~Causing~~ causing the host plant cell to (i) express the modified nucleotide sequence to form a modified immunoglobulin heavy chain, (ii) co-express an immunoglobulin light chain and (iii) secrete the modified immunoglobulin heavy chain and an immunoglobulin light chain from the host plant cell.

2-33.   **(Cancelled)**

34.   **(Previously Presented)** A method according to claim 1 wherein the immunoglobulin heavy chain molecule is IgA, IgM or an IgA/G hybrid.

35.   **(Previously Presented)** A method according to claim 1 wherein the nucleotide sequence is modified by at least one of the modifications selected from the group consisting of
      (i) one or more point mutations of the nucleotide sequence,

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(ii) deleting one or more nucleotides,

(iii) adding one or more nucleotides and

(iv) replacing one or more nucleotides with a synthetic nucleotide sequence.

36. **(Previously presented)** A method according to claim 35, wherein the synthetic nucleotide sequence encodes an amino acid sequence of general formula:

$-(Xaa_1)_m C(Xaa_2)_n$

where: C = a cysteine residue

Xaa_1 = independently any amino acid with the proviso that it is not from I, L or forms a consecutive sequence $X_1 X_2 X_3 V S X_4$ (SEQ ID NO: 1)

where: X_1 = N, H or L

X_2 = V or Y

X_3 = S or N

X_4 = aliphatic amino acid

Xaa_2 = independently any amino acid

m = at least 2

n = 0 to 5.

37. **(Previously presented)** A method according to claim 36, wherein Xaa_2 is Y and n = 1.

38. **(Previously Presented)** A method according claim 1, wherein nucleotides encoding the last 16 amino acids of the immunoglobulin heavy chain are deleted.

39. **(Previously Presented)** A method according to claim 1 wherein the resultant amino acid sequence at the C terminus of the immunoglobulin heavy chain has a formula selected from the group consisting of:

(a) SCMVGHEALPMNFTQKTIDRLSGKPACY (SEQ ID NO: 7),

(b) SCMVGHEALPMNFTQKTIDRLSGKPAAACY (SEQ ID NO: 8),

(c) SCMVGHEALPMNFTQKTIDRLSGKPHASTPEPDPVACY (SEQ ID NO: 9) and

(d) SCMVGHEALPMNFTQKTIDRLSGKPAAAAACY (SEQ ID NO: 69).

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40.   (Previously Presented) A method according to claim 1 wherein the nucleotide sequence of part (a) originally encoded the amino acid sequence:

$X_1 X_2 X_3$ V S X_4 (SEQ ID NO: 1)

where: X_1 = N, H or L

X_2 = V or Y

X_3 = S or N

X_4 = aliphatic amino acid.

41.   (Previously presented) A method according to claim 40, wherein the amino acid sequence is: N V S V S V (SEQ ID NO: 2).

42.   (Previously Presented) A method according to claim 1 wherein the nucleotide sequence of part (a) encoded L or I.

43.   (Previously Presented) A method according to claim 42, wherein the modified nucleotide sequence encodes a modified amino acid selected from the group consisting of:

(i) an isoleucine 3 amino acids from the C-terminus end of the immunoglobulin heavy chain,

(ii) an isoleucine 10 amino acids from the C-terminus end of the immunoglobulin heavy chain and

(iii) an isoleucine 3 amino acids from the C-terminus end of the immunoglobulin heavy chain and an isoleucine 2 amino acids from the C-terminus end of the immunoglobulin heavy chain.

44.   (Previously Presented) A method according to claim 1, wherein the modified nucleotide sequence is contained within a nucleotide sequence encoding the sequence:

P T $X_1 X_2 X_3$ V S $X_4 X_5 X_6 X_7 X_8 X_9 X_{10} X_{11} X_{12}$ C X_{13} (SEQ ID NO: 5)

where: X_1 = N, H or L

X_2 = V or Y

X_3 = S or N

X_4 = an aliphatic amino acid

X_5 = an aliphatic amino acid

X_6 = M, V or L

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X_7 = S or A

X_8 = E or D

X_9 = any amino acid

X_{10} = D, E, G or A

X_{11} = G or S

X_{12} = I, T, V, Z or A

X_{13} = may or may not be present and, where present is A or Y.

45. **(Currently Amended)** A method of adding J-chain binding capability to the immunoglobulin heavy chain of an antibody comprising the steps of:

(a)   providing a nucleotide encoding an immunoglobulin heavy chain;

(b)   adding to that nucleotide a nucleotide sequence encoding a synthetic tail with the amino acid sequence:

$-(Xaa_1)_m C(Xaa_2)_n$

where: C   = Cys

Xaa_1 is independently any amino acid with the proviso that it is not I or L or forms a consecutive sequence $X_1 X_2 X_3 V S X_4$ (SEQ ID NO: 1) (where X_1 = N, H or L; X_2 =

V or Y; X_3 = S or N; X_4 = aliphatic amino acid)

Xaa_2 = independently any amino acid

m   = at least 2

n   = 0 to 5; ~~and~~

(c)   expressing the immunoglobulin nucleotide in a host <u>plant</u> cell to form an immunoglobulin heavy chain capable of binding J-chain<u>, and</u>

<u>(d)   co-expressing an immunoglobulin light chain in said host plant cell</u>.

46.   **(Cancelled)**

47.   **(Cancelled)**

48.　　(**Currently Amended**) A method according to ~~claim 46~~ claim 1, wherein the plant cell is part of a transgenic plant.

49.　　(**Currently Amended**) A method according to ~~claim 47~~ claim 45, wherein the plant cell is part of a transgenic plant.

50.　　(**Previously presented**) A method according to claim 1 additionally comprising the step of isolating and purifying the antibody molecule.

51.　　(**Previously presented**) A method according to claim 45 additionally comprising the step of isolating and purifying the antibody molecule.

52.　　(**Previously Presented**) A method according to claim 50, wherein the antibody molecule is subjected to a protease digest to produce Fab or $F(ab')_2$ fragments.

53.　　(**Previously presented**) A method according to claim 51, wherein the antibody is subjected to a protease digest to for Fab or $F(ab')_2$ fragments.

54.　　(**Previously Presented**) An antibody containing an immunoglobulin heavy chain comprising an $\alpha 3$ domain or a mu domain, the $\alpha 3$ domain or mu domain lacking one or more targeting signals towards the C-terminal end.

55.　　(**Previously presented**) An antibody capable of binding J-chain comprising at its C-terminal end the sequence:

$-(Xaa_1)_m \, C(Xaa_2)_n$

where: C　=　Cys

Xaa_1 is independently any amino acid with the proviso that it is not I or L or forms a consecutive sequence $X_1 \, X_2 \, X_3 \, V \, S \, X_4$ (SEQ ID NO: 1) (where X_1 = N, or L; X_2 = V or Y; X_3 = S or N; X_4 = aliphatic amino acid)

Xaa_2 = independently any amino acid

m　=　at least 2

n　=　0 to 5

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56.   (**Previously presented**) An antibody according to claim 54 which does not contain the targeting signal: $X_1 X_2 X_3 V S X_4$ (SEQ ID NO: 1)

where: X_1 = N, H or L

X_2 = V or Y

X_3 = S or N

X_4 = aliphatic amino acid.

57.   (**Previously presented**) An antibody according to claim 55 which does not contain the targeting signal: $X_1 X_2 X_3 V S X_4$ (SEQ ID NO: 1)

where: X_1 = N, H or L

X_2 = V or Y

X_3 = S or N

X_4 = aliphatic amino acid.

58.   (**Previously presented**) An antibody according to claim 56, wherein the targeting signal is N V S V S V (SEQ ID NO: 2).

59.   (**Previously presented**) An antibody according to claim 57, wherein the targeting signal is N V S V S V (SEQ ID NO: 2).

60.   (**Previously presented**) An antibody according to claim 54 which contains one or no isoleucine or leucine amino acids within the last 18 amino acids at the C-terminus of the heavy chain of the antibody.

61.   (**Previously presented**) An antibody according to claim 55 which contains one or no isoleucine or leucine amino acids within the last 18 amino acids at the C-terminus of the heavy chain of the antibody.

62.   (**Previously presented**) An antibody according to claim 54 comprising at the C-terminus end of the heavy chain of antibody, the sequence:

$-(Xaa_1)_m C(Xaa_2)_n$

where: C   = cysteine residue

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Xaa_1 = independently any amino acid with the proviso that it is not I or L

or forms a consecutive sequence $X_1\ X_2\ X_3$ V S X_4 (SEQ ID NO: 2)

where: X_1 = N, H or L

X_2 = V or Y

X_3 = S or N

X_4 = aliphatic amino acid

Xaa_2 = independently any amino acid

m = at least 2

n = 0 to 5.

63.   **(Previously presented)** An antibody according to claim 55 comprising at the C-terminus end of the heavy chain of antibody, the sequence:

$-(Xaa_1)_m\ C(Xaa_2)_n$

where: C = cysteine residue

Xaa_1 = independently any amino acid with the proviso that it is not I or L

or forms a consecutive sequence $X_1\ X_2\ X_3$ V S X_4 (SEQ ID NO: 2)

where: X_1 = N, H or L

X_2 = V or Y

X_3 = S or N

X_4 = aliphatic amino acid

Xaa_2 = independently any amino acid

m = at least 2

n = 0 to 5.

64.   **(Previously presented)** An antibody according to claim 54 in which at least two, preferably two to four, glycine or alanine residues are present downstream of a C-terminal targeting sequence

65.   **(Previously presented)** An antibody according to claim 55 in which at least two, preferably two to four, glycine or alanine residues are present downstream of a C-terminal targeting sequence

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66.   **(Previously presented)** An antibody according to claim 54 in which at least the terminal amino acid residue of a C-terminal targeting sequence is replaced by at least two, preferably two to four, glycine or alanine residues.

67.   **(Previously presented)** An antibody according to claim 55 in which at least the terminal amino acid residue of a C-terminal targeting sequence is replaced by at least two, preferably two to four, glycine or alanine residues.

68.   **(Previously presented)** A method of treating a disease by administering an antibody according to claim 54 to a patient.

69.   **(Previously presented)** A method of treating a disease by administering an antibody according to claim 55 to a patient.

70.   **(Previously presented)** A method of prophylaxis, comprising administering an antibody according to claim 54 to a person or animal.

71.   **(Previously presented)** A method of prophylaxis, comprising administering an antibody according to claim 55 to a person or animal.

72.   **(Previously presented)** A vector comprising a nucleotide sequence encoding an antibody according to claim 54.

73.   **(Previously presented)** A vector comprising a nucleotide sequence encoding an antibody according to claim 55.

74.   **(Previously presented)** A host cell comprising a nucleotide sequence encoding antibody according to claim 54.

75.   **(Previously presented)** A host cell comprising a nucleotide sequence encoding antibody according to claim 55.

76.   **(Previously presented)** A host cell comprising a vector according to claim 72.

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77.　　(**Previously presented**) A host cell comprising a vector according to claim 73.

78.　　(**Previously presented**) A transgenic plant comprising a nucleotide encoding an antibody according to claim 54.

79.　　(**Previously presented**) A transgenic plant comprising a nucleotide encoding an antibody according claim 55.

80.　　(**Previously presented**) An immunoassay comprising an antibody as defined in claim 54.

81.　　(**Previously presented**) An immunoassay comprising an antibody as defined in claim 55.

82.　　(**Previously Presented**) The method of claim 1, further comprising adding to the nucleotide sequence encoding the immunoglobulin heavy chain a nucleotide sequence encoding a synthetic tail with the amino acid sequence $-(Xaa_1)_m C(Xaa_2)_n$, wherein:

- -C　= Cys
- Xaa_1 is independently any amino acid with the proviso that it is not I or L or forms a consecutive sequence $X_1 X_2 X_3 V S X_4$ (where X_1 = N, H or L;　X_2 = V or Y;　X_3 = S or N;　X_4 = aliphatic amino acid)
- $-Xaa_2$ = independently any amino acid
- -m　= at least 2
- -n　= 0 to 5; and

wherein said synthetic tail adds J-chain binding capability to the heavy chain of the immunoglobulin.

83.　　(**Cancelled**)

84.　　(**Currently Amended**) A method according to ~~claim 83~~ claim 1, wherein the plant cell is part of a transgenic plant.

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85.   (Previously presented) A method according to claim 82 additionally comprising the step of isolating and purifying the antibody molecule.

86.   (Previously Presented) A method according to claim 85, wherein the antibody molecule is subjected to a protease digest to produce Fab or F(ab')$_2$ fragments.

87.   (Previously Presented) The method according to claim 44, wherein at least one of X_1-X_{13} is a member selected from the group consisting of:

$X_1 = N$

$X_2 = V$

$X_4 = V$ or L

$X_5 = I, V$ or L

$X_6 = M$

$X_9 = G, V, A$ or T

$X_{10} = D$

$X_{11} = G$

$X_{12} = I$ or T.

88.   (Currently Amended) A method of making an antibody molecule, the antibody containing an immunoglobulin heavy chain comprising a $\alpha3$ domain or a mu domain, the method comprising:

(a) Providing providing a nucleotide sequence encoding an immunoglobulin heavy chain molecule;

(b) Modifying modifying the nucleotide sequence to form a modified nucleotide sequence of (a) by deleting the last 16 amino acids of the immunoglobulin heavy chain molecule .

(c) ~~Inserting~~ inserting the modified nucleotide sequence into a host plant cell; and

(d) ~~Causing~~ causing the host plant cell to (i) express the modified nucleotide sequence to form a modified immunoglobulin heavy chain, (ii) co-express an immunoglobulin light chain, and (iii) secrete the modified immunoglobulin heavy chain and an immunoglobulin light chain from the host plant cell.

89.   (**Previously Presented**) A method according to claim 88 wherein the immunoglobulin heavy chain molecule is IgA, IgM or an IgA/G hybrid.

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